TOF in AL80B and AL1500 style amplifiers

(Including the AL80B, AL572, AL1500, AL800, and AL800H series with GOP or Timer/Overload Boards) rev1a Aug 4 2023

Warnings:

1.) Amplifiers using indirectly heated tubes with time delay warm-up must retain the Ameritron board! Overload functions are moved to the TOF system. The warm-up timer function must be retained in the Ameritron board.

2.) Ameritron either has not watched transformer designs on 12Vdc windings or has changed the voltages. Some amplifiers will have more than 15Vdc on the 12Vdc control lines. IC chips and other parts were designed around a nominal 12Vdc supply. Amplifiers with significantly more than 15Vdc on the 12V bus may exhibit premature relay or semiconductor failure. The safest way to verify this voltage is to measure either a 12Vdc rear panel jack if present, or “snake” a temporary 12V sample wire, like a clip lead, out of the cabinet to allow safe measurement with the cover laid in place. The meter lights or standby switch is a good pick point.

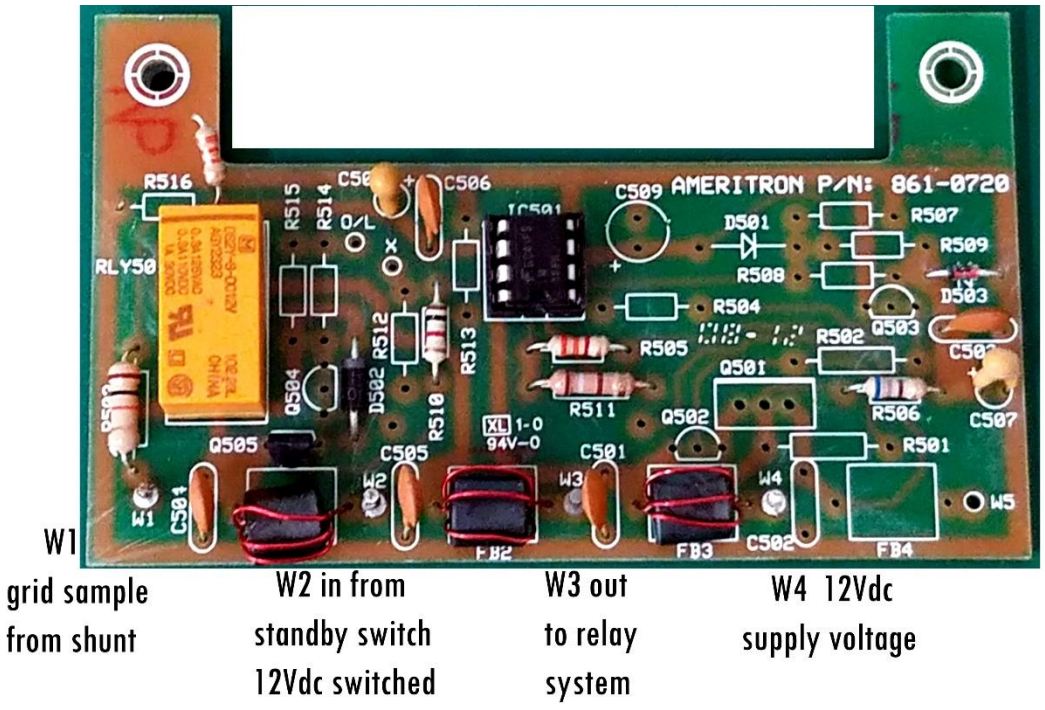

Figure 1 Overload only shown. This board is sold as "GOP" by omitting timer components

1.) Terminal Pad W5, if the board is fully populated, is the time-delayed 12Vdc control output. If used, any connections must be left alone.

2.) Terminal Pad W4 is the continuous 12Vdc supply. This wire, if present, must be left alone. To confirm the transformer meets the original design limits, the 12Vdc rail must never be more than 16Vdc. 15Vdc down to 12Vdc is safe. The connection point for W4 can be used to feed the TOF yellow wire, which is the TOFs 12Vdc continuous power feed.

3.) Terminal Pad W3 is the overload-protected 12Vdc output to the antenna relay system. This wire should be disconnected and used to feed the TOF violet wire when installing the TOF system. Alternatively, if you do not want to splice, you can follow the original wire back to its originating terminal and connect the violet there.

4.) Terminal Pad W2 is the standby-switched +12Vdc input to the boards. This provides a reset connection, as well as standby switching of the relay system. This wire, when 12Vdc is removed, resets the latched overload relay in these boards. This connection would become the gray and orange wire feeds.

Note: Some amplifiers use dual relays and have a 4.7k resistor in ***series*** with the LED. Older amplifiers using single 12Vdc TR relays use a resistor ***shunting*** or ***in parallel*** with the TX LED. Ameritron does not often document changes in schematics or by serial number. You must look to see if a 22-ohm to 33-ohm resistor is in parallel with the LED (dual relay models). If the resistor is in parallel (single TR relay model), the TOF gray and orange wires ***must both be used***. If there is a 4.7K in series with the LED at the standby switch, you eliminate that resistor and do **not** use the gray TOF wire. The gray wire is not connected, and an internal 4.7K becomes in circuit to the violet wire.

5.) The peak reading meter and grid current trip sensing wire is the BLUE TOF wire. This wire can go to where W1 on the original Ameritron GOP or Timer/Overload board connection point, or simply interrupt the positive terminal wire to the grid current meter. The TOF BLUE goes to the meter source, not to the meter terminal.

In most AL1500s W1 connects directly to the meter positive on a white wire. A second white wire comes from the meter board. The white wire from the meter board is the TOF grid current sample source. The white wire to W1 can be disconnected or removed. The TOF Blue will always be connected to the white wire from the metering board. This is the grid current sample point.

6.) The GREEN TOF wire becomes the wire that connects to the grid meter positive terminal. It should be the only wire on the grid meter's positive terminal.